

SEQUENCE LISTING

<110> BACHMANN, Heinrich
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 WOGGON, Wolf-Dietrich
 WYSS, Adrian
 WYSS, Markus

<120> BETA, BETA-CAROTENE 15,15'-MONOOXYGENASES, NUCLEIC ACID
 SEQUENCES CODING THEREFOR AND THEIR USE

<130> B, B-CAROTENE 15,15'-MONOOXYGENASES, ...

<140>

<141>

<150> 103382.0

<151> 1999-02-22

<160> 10

<170> PatentIn Ver. 2.1

<210> 1

<211> 526

<212> PRT

<213> CHICKEN

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Lys Ala Glu Val Gln Gly Gln Leu Pro Thr Trp Leu Gln Gly Val Leu
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Leu Arg Asn Gly Pro Gly Met His Thr Ile Gly Asp Thr Lys Tyr Asn
 35 40 45

His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Phe Lys Asn
 50 55 60

Gly Glu Val Tyr Tyr Arg Ser Lys Tyr Leu Arg Ser Asp Thr Tyr Asn
 65 70 75 80

Cys Asn Ile Glu Ala Asn Arg Ile Val Val Ser Glu Phe Gly Thr Met
 85 90 95

Ala Tyr Pro Asp Pro Cys Lys Asn Ile Phe Ala Lys Ala Phe Ser Tyr
 100 105 110

Leu	Ser	His	Thr	Ile	Pro	Glu	Phe	Thr	Asp	Asn	Cys	Leu	Ile	Asn	Ile	115	120	125
Met	Lys	Thr	Gly	Asp	Asp	Tyr	Tyr	Ala	Thr	Ser	Glu	Thr	Asn	Phe	Ile	130	135	140
Arg	Lys	Ile	Asp	Pro	Gln	Thr	Leu	Glu	Thr	Leu	Asp	Lys	Val	Asp	Tyr	145	150	155
Ser	Lys	Tyr	Val	Ala	Val	Asn	Leu	Ala	Thr	Ser	His	Pro	His	Tyr	Asp	165	170	175
Ser	Ala	Gly	Asn	Ile	Leu	Asn	Met	Gly	Thr	Ser	Ile	Val	Asp	Lys	Gly	180	185	190
Arg	Thr	Lys	Tyr	Val	Leu	Phe	Lys	Ile	Pro	Ser	Ser	Val	Pro	Glu	Lys	195	200	205
Glu	Lys	Lys	Lys	Ser	Cys	Phe	Lys	His	Leu	Glu	Val	Val	Cys	Ser	Ile	210	215	220
Pro	Ser	Arg	Ser	Leu	Leu	Gln	Pro	Ser	Tyr	Tyr	His	Ser	Phe	Gly	Ile	225	230	235
Thr	Glu	Asn	Tyr	Ile	Val	Phe	Ile	Glu	Gln	Pro	Phe	Lys	Leu	Asp	Ile	245	250	255
Val	Lys	Leu	Ala	Thr	Ala	Tyr	Ile	Arg	Gly	Val	Asn	Trp	Ala	Ser	Cys	260	265	270
Leu	Ser	Phe	His	Lys	Glu	Asp	Lys	Thr	Trp	Phe	His	Phe	Val	Asp	Arg	275	280	285
Lys	Thr	Lys	Lys	Glu	Val	Ser	Thr	Lys	Phe	Tyr	Thr	Asp	Ala	Leu	Val	290	295	300
Leu	Tyr	His	His	Ile	Asn	Ala	Tyr	Glu	Glu	Asp	Gly	His	Val	Val	Phe	305	310	315
Asp	Ile	Val	Ala	Tyr	Arg	Asp	Asn	Ser	Leu	Tyr	Asp	Met	Phe	Tyr	Leu	325	330	335
Lys	Lys	Leu	Asp	Lys	Asp	Phe	Glu	Val	Asn	Asn	Lys	Leu	Thr	Ser	Ile	340	345	350
Pro	Thr	Cys	Lys	Arg	Phe	Val	Val	Pro	Leu	Gln	Tyr	Asp	Lys	Asp	Ala	355	360	365
Glu	Val	Gly	Ser	Asn	Leu	Val	Lys	Leu	Pro	Thr	Ser	Ala	Thr	Ala	Val	370	375	380

Lys Glu Lys Asp Gly Ser Ile Tyr Cys Gln Pro Glu Ile Leu Cys Glu
385 390 395 400

Gly Ile Glu Leu Pro Arg Val Asn Tyr Asp Tyr Asn Gly Lys Lys Tyr
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Lys Tyr Val Tyr Ala Thr Glu Val Gln Trp Ser Pro Val Pro Thr Lys
420 425 430

Ile Ala Lys Leu Asn Val Gln Thr Lys Glu Val Leu His Trp Gly Glu
435 440 445

Asp His Cys Trp Pro Ser Glu Pro Ile Phe Val Pro Ser Pro Asp Ala
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Arg Glu Glu Asp Glu Gly Val Val Leu Thr Cys Val Val Val Ser Glu
465 470 475 480

Pro Asn Lys Ala Pro Phe Leu Leu Ile Leu Asp Ala Lys Thr Phe Lys
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<213> CHICKEN

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<210> 4
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<400> 4

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Thr	Trp	Leu	Gln	Gly	Val	Leu	Leu	Arg	Asn	Gly	Pro	Gly	Met	His	Thr	20	25	30	
Ile	Gly	Asp	Thr	Lys	Tyr	Asn	His	Trp	Phe	Asp	Gly	Leu	Ala	Leu	Leu	35	40	45	
His	Ser	Phe	Thr	Phe	Lys	Asn	Gly	Glu	Val	Tyr	Tyr	Arg	Ser	Lys	Tyr	50	55	60	
Leu	Arg	Ser	Asp	Thr	Tyr	Asn	Cys	Asn	Ile	Glu	Ala	Asn	Arg	Ile	Val	65	70	75	80
Val	Ser	Glu	Phe	Gly	Thr	Met	Ala	Tyr	Pro	Asp	Pro	Cys	Lys	Asn	Ile	85	90	95	
Phe	Ala	Lys	Ala	Phe	Ser	Tyr	Leu	Ser	His	Thr	Ile	Pro	Glu	Phe	Thr	100	105	110	
Asp	Asn	Cys	Leu	Ile	Asn	Ile	Met	Lys	Thr	Gly	Asp	Asp	Tyr	Tyr	Ala	115	120	125	
Thr	Ser	Glu	Thr	Asn	Phe	Ile	Arg	Lys	Ile	Asp	Pro	Gln	Thr	Leu	Glu	130	135	140	
Thr	Leu	Asp	Lys	Val	Asp	Tyr	Ser	Lys	Tyr	Val	Ala	Val	Asn	Leu	Ala	145	150	155	160
Thr	Ser	His	Pro	His	Tyr	Asp	Ser	Ala	Gly	Asn	Ile	Leu	Asn	Met	Gly	165	170	175	
Thr	Ser	Ile	Val	Asp	Lys	Gly	Arg	Thr	Lys	Tyr	Val	Leu	Phe	Lys	Ile	180	185	190	
Pro	Ser	Ser	Val	Pro	Glu	Lys	Glu	Lys	Lys	Lys	Ser	Cys	Phe	Lys	His	195	200	205	
Leu	Glu	Val	Val	Cys	Ser	Ile	Pro	Ser	Arg	Ser	Leu	Leu	Gln	Pro	Ser	210	215	220	
Tyr	Tyr	His	Ser	Phe	Gly	Ile	Thr	Glu	Asn	Tyr	Ile	Val	Phe	Ile	Glu	225	230	235	240
Gln	Pro	Phe	Lys	Leu	Asp	Ile	Val	Lys	Leu	Ala	Thr	Ala	Tyr	Ile	Arg	245	250	255	
Gly	Val	Asn	Trp	Ala	Ser	Cys	Leu	Ser	Phe	His	Lys	Glu	Asp	Lys	Thr	260	265	270	
Trp	Phe	His	Phe	Val	Asp	Arg	Lys	Thr	Lys	Lys	Glu	Val	Ser	Thr	Lys				

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Phe	Tyr	Thr	Asp	Ala	Leu	Val	Leu	Tyr	His	His	Ile	Asn	Ala	Tyr	Glu
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Glu	Asp	Gly	His	Val	Val	Phe	Asp	Ile	Val	Ala	Tyr	Arg	Asp	Asn	Ser
305				310						315					320
Leu	Tyr	Asp	Met	Phe	Tyr	Leu	Lys	Lys	Leu	Asp	Lys	Asp	Phe	Glu	Val
				325					330					335	
Asn	Asn	Lys	Leu	Thr	Ser	Ile	Pro	Thr	Cys	Lys	Arg	Phe	Val	Val	Pro
			340					345					350		
Leu	Gln	Tyr	Asp	Lys	Asp	Ala	Glu	Val	Gly	Ser	Asn	Leu	Val	Lys	Leu
	355						360					365			
Pro	Thr	Ser	Ala	Thr	Ala	Val	Lys	Glu	Lys	Asp	Gly	Ser	Ile	Tyr	Cys
	370					375					380				
Gln	Pro	Glu	Ile	Leu	Cys	Glu	Gly	Ile	Glu	Leu	Pro	Arg	Val	Asn	Tyr
385					390					395					400
Asp	Tyr	Asn	Gly	Lys	Lys	Tyr	Lys	Tyr	Val	Tyr	Ala	Thr	Glu	Val	Gln
				405					410					415	
Trp	Ser	Pro	Val	Pro	Thr	Lys	Ile	Ala	Lys	Leu	Asn	Val	Gln	Thr	Lys
			420					425					430		
Glu	Val	Leu	His	Trp	Gly	Glu	Asp	His	Cys	Trp	Pro	Ser	Glu	Pro	Ile
	435						440					445			
Phe	Val	Pro	Ser	Pro	Asp	Ala	Arg	Glu	Glu	Asp	Glu	Gly	Val	Val	Leu
	450					455					460				
Thr	Cys	Val	Val	Val	Ser	Glu	Pro	Asn	Lys	Ala	Pro	Phe	Leu	Leu	Ile
465					470					475					480
Leu	Asp	Ala	Lys	Thr	Phe	Lys	Glu	Leu	Gly	Arg	Ala	Thr	Val	Asn	Val
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Glu	Met	His	Leu	Asp	Leu	His	Gly	Met	Phe						
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Phe Glu Val Gly Ser Glu Pro Phe Tyr His Leu Phe Asp Gly Gln Ala	35	40	45
Leu Leu His Lys Phe Asp Phe Lys Glu Gly His Val Thr Tyr His Arg	50	55	60
Arg Phe Ile Arg Thr Asp Ala Tyr Val Arg Ala Met Thr Glu Lys Arg	65	70	75
Ile Val Ile Thr Glu Phe Gly Phe Thr Thr Cys Ala Phe Pro Asp Pro	85	90	95
Cys Lys Asn Ile Phe Ser Arg Phe Phe Ser Tyr Phe Arg Gly Val Glu	100	105	110
Val Thr Asp Asn Ala Leu Val Asn Val Tyr Pro Val Gly Glu Asp Tyr	115	120	125
Tyr Ala Cys Thr Glu Thr Asn Phe Ile Thr Lys Ile Asn Pro Glu Thr	130	135	140
Leu Glu Thr Ile Phe Thr Lys Gln Val Asp Leu Cys Asn Tyr Val Ser	145	150	155
Val Asn Gly Ala Thr Ala His Pro His Ile Glu Asn Asp Gly Thr Val	165	170	175
Tyr Asn Ile Gly Asn Cys Phe Gly Lys Asn Phe Ser Ile Ala Tyr Asn	180	185	190
Ile Val Lys Ile Pro Pro Leu Gln Ala Asp Lys Glu Asp Pro Ile Ser	195	200	205
Lys Phe Thr Ser Glu Ile Val Val Gln Phe Pro Cys Ser Asp Arg Phe	210	215	220
Lys Pro Ser Tyr Val His Ser Phe Gly Leu Thr Pro Asn Tyr Ile Val	225	230	235
Phe Val Glu Thr Pro Val Lys Ile Asn Leu Phe Lys Phe Leu Ser Ser	245	250	255
Trp Ser Leu Trp Gly Ala Asn Tyr Met Asp Cys Phe Glu Ser Phe Thr	260	265	270
Asn Glu Thr Met Gly Val Trp Leu His Ile Ala Asp Lys Lys Arg Lys	275	280	285

Lys Tyr Leu Asn Asn Lys Tyr Arg Thr Ser Pro Phe Asn Leu Phe His
 290 295 300
 His Ile Asn Thr Tyr Glu Asp Asn Gly Phe Leu Ile Val Asp Leu Cys
 305 310 315 320
 Cys Trp Lys Gly Phe Glu Phe Val Tyr Asn Tyr Phe Thr Leu Tyr Leu
 325 330 335
 Ala Asn Leu Arg Glu Asn Trp Glu Glu Val Lys Lys Asn Ala Arg Lys
 340 345 350
 Ala Pro Gln Pro Glu Val Arg Arg Tyr Val Leu Pro Leu Asn Ile Asp
 355 360 365
 Lys Ala Asp Thr Gly Lys Asn Leu Val Thr Leu Pro Asn Thr Thr Ala
 370 375 380
 Thr Ala Ile Leu Cys Ser Asp Glu Phe Thr Thr Ile Trp Leu Glu Pro
 385 390 395 400
 Glu Val Leu Phe Ser Gly Pro Arg Gln Ala Phe Glu Phe Pro Gln Ile
 405 410 415
 Asn Tyr Gln Lys Tyr Cys Gly Lys Pro Tyr Thr Tyr Ala Tyr Gly Leu
 420 425 430
 Gly Leu Asn His Phe Val Pro Asp Arg Leu Cys Lys Leu Asn Val Lys
 435 440 445
 Thr Lys Glu Thr Trp Phe Thr Val Trp Gln Glu Pro Asp Ser Tyr Pro
 450 455 460
 Ser Glu Pro Ile Phe Val Ser His Pro Asp Ala Leu Glu Glu Asp Asp
 465 470 475 480
 Gly Val Val Leu Ser Val Val Val Ser Pro Gly Ala Gly Gln Lys Pro
 485 490 495
 Ala Tyr Leu Leu Ile Leu Asn Ala Lys Asp Leu Ser Glu Val Ala Arg
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 Ala Glu Phe Thr Val Glu Ile Asn Ile Pro Val Thr Phe His Gly Leu
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Phe

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<212> PRT
<213> CHICKEN

<400> 6

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Leu Pro

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<212> PRT
<213> CHICKEN

<400> 7

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Leu Pro

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<223> Description of Artificial Sequence: Primer

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